

What is claimed is:

1. An optical fiber whose chromatic dispersion is  $-20 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or more but  $-3 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or less at all of the wavelengths in the range of 1300 nm to 1600 nm.

5 2. An optical fiber whose chromatic dispersion is  $-12 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or more but  $-4 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or less at all of the wavelengths in the range of 1300 nm to 1600 nm.

3. An optical fiber whose chromatic dispersion is  $-20 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or more but  $-3 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or less at all of the wavelengths in the range of 1250  
10 nm to 1650 nm.

4. An optical fiber whose chromatic dispersion is  $-16 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or more but  $-4 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or less at all of the wavelengths in the range of 1250  
nm to 1650 nm.

5. An optical fiber according to Claim 1, wherein the effective area at an  
15 wavelength of 1550 nm is  $40 \mu\text{m}^2$  or more.

6. An optical fiber according to Claim 1, wherein the loss increase due to OH group at a wavelength of 1380 nm is  $0.1 \text{ dB} \cdot \text{km}^{-1}$  or less.

7. An optical fiber according to Claim 1, wherein said optical fiber is provided with (1) a central core region including the center of optical axis and  
20 having a first refractive index, (2) a second core region enclosing the central core region and having a second refractive index which is smaller than the first refractive index, (3) a third core region enclosing the second core region and

having a third refractive index which is greater than the second refractive index, and (4) a clad region enclosing the third core region and having a fourth refractive index which is smaller than the third refractive index.

8. An optical fiber according to Claim 7, wherein said clad region  
5 includes an inner clad region having a refractive index smaller than said third refractive index and an outer clad region having a refractive index greater than the refractive index of the inner clad region.

9. An optical fiber according to Claim 7, wherein the relative refractive index difference of said central core region is 0.4% or more but 0.7% or less with  
10 respect to the refractive index of the outermost layer of said clad region.

10. An optical transmission system comprising:

a transmitting station to send out light signals having wavelengths in the range of 1300 nm to 1600 nm after multiplexing the same;

an optical fiber according to Claim 1 to transmit said light signals; and

15 a receiving station to receive said light signals and demultiplex the same into their respective wavelengths.

11. An optical transmission system comprising:

a transmitting station to send out light signals having wavelengths in the range of 1250 nm to 1650 nm after multiplexing the same;

20 an optical fiber according to Claim 3 to transmit said light signals; and

a receiving station to receive said light signals and demultiplex the same into their respective wavelengths.